

anchor ice in the canal the leading flour mills were compelled to close their gates; at La Crosse, Wis., on the 20th and 21st much floating ice; at Dubuque, Iowa, 22nd, shore ice, 23rd, river full of floating ice, "navigation suspended;" floating ice was also reported at Davenport, 25th to 30th, at Muscatine, 24th and at Burlington on the 29th. *Rock River* at Rockford, Ill., was covered with thin ice on the 4th; on the 21st it froze over and remained partly frozen until the 25th, on the 27th the ice had disappeared. The *Manitowoc* river at Manitowoc, Wis., was closed by ice on the 20th, and the *Embarrass* river at Embarrass, Wis., was frozen over on the 30th. The *Toledo* river was covered by thin ice the 24th and 26th at Toledo, Ohio; at Sandusky, 20th, ice formed along the docks and on the 24th and 25th considerable floating ice was observed in the bay. The *Monongahela* at Morgantown frozen over on the 24th but opened on the 26th. On the 21st and 22nd, quite an ice blockade formed in the Erie canal at Rome and Auburn, N. Y., but the ice was broken up on the 23rd; on the 26th there was considerable floating ice in the canal at Whitehall, N. Y., and a tow of nine barges was frozen in on the 28th. *Lake Champlain*, West Charlotte, Vt., ice formed along the lake shores on the 21st and 30th. *Ottawa River*.—On the 24th navigation was practically closed by ice at Ottawa, Ontario, and the *St. John River* at Fredericton, N. B., was frozen over. *St. Lawrence River*.—On the 22nd was frozen over from above the rapids down to the Grand Trunk Railroad bridge; on the 26th ice was forming in considerable quantities along the shores of the Lower St. Lawrence, and two schooners were reported frozen in at Kamouraska; and, same date, steamer Bellona, the last boat of season from Montreal to Liverpool, got fast in ice at Lake St. Peter, near Three Rivers, but afterward got out and proceeded on the 29th.

High Tides.—Eastport, 15th, 16th.

Low Tides.—Baltimore, 21st, unusually low; Portsmouth, N. C., 9th, 10th, 11th, 12th, 26th 27th, unusually low.

TEMPERATURE OF WATER.

The Temperatures of Water, as observed in rivers and harbors, with average depth at which the observations were taken, are given on Chart No. II. At the following stations no observations were made on the dates indicated: At Cedar Keys, Fla., observations were commenced on the 16th; at Cleveland, the Lake was too rough on the 3rd, 18th, 20th, 23rd, 25th, 28th and 29th, and on the 21st and 22nd the pier was covered with ice and snow; at Escanaba floating ice prevented observations being made during the last three days of month.

ATMOSPHERIC ELECTRICITY.

Thunder-storms were reported in the various districts, as follows: New England, on the 3rd, 6th, 7th, 12th, 13th, 14th, 19th, 20th, 22nd; Middle Atlantic States, 3rd, 11th, 12th, 14th, 15th, 19th, 23rd, 29th; South Atlantic States, 15th, 19th; Eastern Gulf States, 6th, 11th, 13th, 14th, 15th, 17th, 27th, 28th; Western Gulf States, 5th, 8th, 9th, 11th, 13th, 14th, 17th, 27th; Ohio valley and Tennessee, 2nd, 9th, 10th, 12th, 13th, 14th, 15th, 16th, 17th, 27th, 28th, 29th; Upper Lake region, 8th, 9th, 10th, 11th, 12th, 14th, 15th, 26th, 27th, 28th; Lower Lake region, 2nd, 9th, 12th, 14th, 15th, 23rd; Upper Mississippi valley, 8th, 10th, 11th, 12th, 13th, 14th, 16th, 17th, 18th, 21st, 24th, 26th, 27th, 28th; Lower Missouri valley, 8th, 10th, 11th, 13th, 14th, 16th, 26th, 27th, 28th; Middle Eastern Rocky Mountain Slope, 8th, 10th, 11th, 13th, 14th, 16th, 17th, 26th, 27th.

Auroras.—Cambridge, Mass., regularly looked for 8 p. m.; none seen during the month; decidedly cloudy on the 2nd, 3rd, 6th, 8th, 9th, 11th, 12th, 13th, 14th, 15th, 17th, 18th, 19th, 20th, 27th, 28th; some clouds, with moonlight, 22nd, 25th; moonlight, 1st, 21st, 23rd, 24th, 26th, 29th, 30th; if present, might have been seen 4th, 5th, 7th, 10th, 16th. Calistoga, Cal., 26th, 8:30 p. m., extended from WNW. to NNE.; diffuse yellow light; no streamers. Olivet, Dak., 6th, slight diffuse light. Augusta, Ill., 30th. Fort Wayne, Ind., 13th, 14th. Iowa City, Ia., 5th, 14th, 30th. Fall River, Mass., 1st. Vineland, N. J., 12th. Starkey, N. Y., 3rd, 13th, 21st. Ringgold, Ohio, 3rd, 10th. Milton, Pa., 15th, 5:30 p. m., two arches, colors dark, tinged with red; disappeared at 6 p. m. Bismarck, 11th, from 6 to 10 p. m., white nebulous light. Toledo, 1st, 10 p. m., single arch. Port Huron, 28th.

OPTICAL PHENOMENA.

Solar Halos were reported from the various districts on the following dates:—New England, on the 2nd, 10th, 11th, 21st, 22nd and 27th; Middle States, 2nd, 10th, 19th, 26th and 30th; South Atlantic States, 5th, 6th, 11th, 12th, 22nd, 28th and 29th; Lake Region and Ohio valley, 2nd, 7th, 8th, 10th, 15th, 16th, 21st, 22nd, 24th, 26th, 27th, 29th and 30th; Gulf States, 4th, and from the 23rd to the 27th; Northwest, 4th, 5th, 7th, 9th, 11th, 13th, 16th, 17th, 19th, 20th, 21st, 23rd, 25th, 26th, 27th and 30th; New Mexico, on the 3rd; Nevada, 6th and 25th; California, on the 1st and 2nd.

Lunar Halos were reported from the various districts on the following dates:—New England from the 22nd to the 29th, inclusive; Middle States, 1st and 2nd, and from the 20th to the 30th; South Atlantic States, 2nd, 3rd and 5th, and from the 21st to the 30th; Florida, 24th 25th and 29th; Alabama, 24th; Mississippi 5th and 24th; Southwest, 19th to 30th; Tennessee, 22nd to 26th and on the 30th; Ohio valley, 1st to 3rd, 22nd to 27th and on the 30th; Lower Lake region, 1st, 24th and 30th; Upper Lake region, 1st to 3rd, 21st, 24th, 25th and 29th; Northwest, 2nd to 5th, and from the 20th to the 30th; Colorado, 25th, 28th, 29th and 30th; New Mexico, 2nd, 28th and 29th; Nevada, 24th, 25th and 29th; Idaho, 4th, 19th and 23rd; California, 1st, 2nd, 27th, 29th and 30th.